

(12)特許協力条約に基づいて公開された国際出願

(19) 世界知的所有権機関  
国際事務局(43) 国際公開日  
2004 年 5 月 6 日 (06.05.2004)

PCT

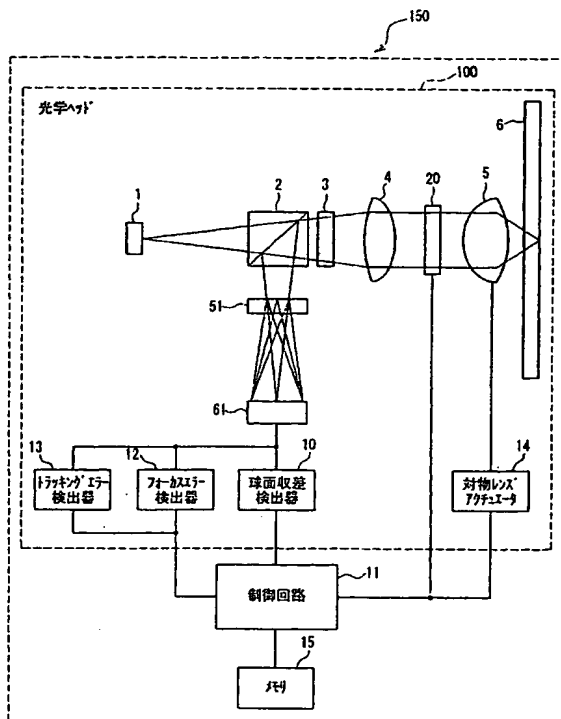
(10) 国際公開番号  
WO 2004/038708 A1

- (51) 国際特許分類: G11B 7/09, 7/125  
(21) 国際出願番号: PCT/JP2003/012864  
(22) 国際出願日: 2003 年 10 月 8 日 (08.10.2003)  
(25) 国際出願の言語: 日本語  
(26) 国際公開の言語: 日本語  
(30) 優先権データ:  
特願 2002-297293  
2002 年 10 月 10 日 (10.10.2002) JP  
(71) 出願人 (米国を除く全ての指定国について): 松下電  
器産業株式会社 (MATSUSHITA ELECTRIC INDUS-  
TRIAL CO., LTD.) [JP/JP]; 〒571-8501 大阪府 門真市  
大字門真1006番地 Osaka (JP).  
(72) 発明者; および  
(75) 発明者/出願人 (米国についてののみ): 山崎 文朝 (YA-  
MASAKI, Fumitomo) [JP/JP]; 〒630-8037 奈良県 奈良  
市中町5142-10 Nara (JP). 荒井 昭浩 (ARAI, Akihiro)  
[JP/JP]; 〒619-0225 京都府 相楽郡 木津町木津川台  
6-2-1-1-504 Kyoto (JP).  
(74) 代理人: 特許業務法人池内・佐藤アンドパートナー  
ズ (IKEUCHI SATO & PARTNER PATENT ATTOR-  
NEYS); 〒530-6026 大阪府 大阪市 北区天満橋1丁目8  
番30号OAPタワー26階 Osaka (JP).  
(81) 指定国 (国内): AE, AG, AL, AM, AT, AU, AZ, BA, BB,  
BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK,  
DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR,  
HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS,

[続葉有]

(54) Title: OPTICAL HEAD AND OPTICAL DISK UNIT

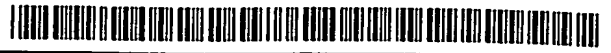
(54) 発明の名称: 光学ヘッドおよび光ディスク装置



100... OPTICAL HEAD  
10... SPHERICAL ABERRATION DETECTOR  
11... CONTROL CIRCUIT  
12... FOCUS ERROR DETECTOR  
13... TRACKING ERROR DETECTOR  
14... OBJECT LENS ACTUATOR  
15... MEMORY

(57) Abstract: An optical head comprising a light source, an object lens, a light splitting means, a light receiving element, a tracking error signal detecting means, and a spherical aberration detecting means, wherein the light splitting means has six regions divided by a first splitting line parallel to the longitudinal direction of information tracks and by second and third splitting lines perpendicular to the first splitting line, and the spherical aberration detecting means compares the deviation of a first focus point obtained from a light flux passed through two regions disposed between second and third splitting lines with the deviation of a second focus point obtained from a light flux passed through four regions disposed on the outer side of the second and third splitting lines to generate a spherical aberration error signal for detecting a spherical aberration generated at the object lens.

[続葉有]



LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI,  
NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,  
SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW.

- (84) 指定国(広域): ARIPO 特許 (GH, GM, KE, LS, MW, MZ,  
SD, SL, SZ, TZ, UG, ZM, ZW), ユーラシア特許 (AM,  
AZ, BY, KG, KZ, MD, RU, TJ, TM), ヨーロッパ特許  
(AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB,  
GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR),

OAPI 特許 (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG).

添付公開書類:

- 国際調査報告書
- 請求の範囲の補正の期限前の公開であり、補正書受領の際には再公開される。

2 文字コード及び他の略語については、定期発行される各 PCT ガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

(57) 要約:

光学ヘッドは、光源と対物レンズと光分割手段と受光素子とトラッキングエラー信号検出手段と球面収差検出手段とを具備しており、光分割手段は、情報トラックの長手方向に平行な第 1 の分割線と、第 1 の分割線と直交する第 2 および第 3 の分割線とによって分割された 6 つの領域を有しており、球面収差検出手段は、第 2 および第 3 の分割線の上に配置された 2 つの領域を通過した光束から得られる第 1 のフォーカス点のずれ量と、第 2 および第 3 の分割線の外側に配置された 4 つの領域を通過した光束から得られる第 2 のフォーカス点のずれ量とを比較して、対物レンズにおいて発生する球面収差を検出するための球面収差誤差信号を生成する。

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/12864

A. CLASSIFICATION OF SUBJECT MATTER  
Int.Cl<sup>7</sup> G11B7/09, 7/125

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> G11B7/09, 7/095, 7/125, 7/135

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Toroku Jitsuyo Shinan Koho	1994-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Jitsuyo Shinan Toroku Koho	1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 11-73658 A (Matsushita Electric Industrial Co., Ltd.), 16 March, 1999 (16.03.99), Full text; Figs. 1 to 20 Full text; Figs. 1 to 20 & US 6185167 B1	1, 7-11 2, 12
Y A	JP 2002-157756 A (Sharp Corp.), 31 May, 2002 (31.05.02), Full text; Figs. 1 to 10 Full text; Figs. 1 to 10 & US 2002/56802 A1	1, 7-11 2, 12
P, A	JP 2002-358677 A (Hitachi, Ltd.), 13 December, 2002 (13.12.02), Full text; Figs. 1 to 14 & CN 1388523 A	1-2, 7-12

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
18 February, 2004 (18.02.04)

Date of mailing of the international search report  
09 March, 2004 (09.03.04)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/12864

## Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1-2, 7-12 relate to a device provided with a light splitting means having six regions divided by a first splitting line parallel to the longitudinal direction of information tracks and by second and third splitting lines being perpendicular to the first splitting line and disposed in parallel and symmetric to each other with respect to the optical axis of the optical system.

(Continued to extra sheet)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-2, 7-12

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

Continuation of Box No. II of continuation of first sheet(1)

Claims 3-4 relate to a device provided with a light splitting means having eight regions divided by a first splitting line parallel to the longitudinal direction of information tracks, a second splitting line being perpendicular to the first splitting line and passing the optical axis of an object lens, a third splitting line disposed in parallel to the second splitting line, and a fourth splitting line being disposed on the opposite side with respect to the second splitting line of the third splitting line and having a semi-circular shape around the optical axis of a condensing optical system.

Claims 5-6 relate to a device provided with a light splitting means having eight regions divided by a first splitting line parallel to the longitudinal direction of information tracks, second and third splitting lines being perpendicular to the first splitting line and disposed in parallel and symmetric to each other with respect to the optical axis of an object lens, and a fourth splitting line being disposed between the second and third splitting lines and having a semi-circular shape around the optical axis of a condensing optical system.